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COAL: THE IMMEDIATE FUTURE
A PSYCHOLOGIST'S VIEW

BY

CHARLES S. MYERS

C.B.E., F.R.S., M.D., Sc.D.

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THERE are generally two ways of looking at any problem—from the narrow and from the broad point of view. When the supply of any commodity exceeds the demand for it, the obvious remedy from the narrow standpoint is to cut down production at all costs. From the same standpoint, when the supply of coal exceeds the demand, the obvious remedy is to work mines part-time or to close some of them down, thus throwing many miners out of work. This seems the cogent, logical and inevitable procedure, from the narrow point of view. But with the adoption of a broader standpoint, stress is laid on under-consumption rather than on over-production. And the question arises whether every inhabitant of the world has already enough coal, and whether costs of production and distribution can be so reduced that more would be purchased.

In the case of coal, it is possible to introduce machinery at the coal face, so that coal is won in greater quantity and with greater economy by mechanical rather than by manual means ; in 1928 only 26 per cent. of the coal in this country was obtained by coal-cutting machines, whereas in 1934 this percentage had risen to 47. So, too, mechanical conveyers may be introduced to carry coal more efficiently and more economically from the coal face to the pit bottom : in 1928 only 12 per cent. of the coal in this country was being thus mechanically transported, whereas in 1934 this percentage had risen to 37. In 1928 the saleable coal in this country was being produced at a loss of 11*d.* per ton ; in 1934 this loss had been converted through these mechanical and various other changes into a profit of 5*d.* But by 1934 the total production of coal had dropped to 220·7 million tons from

257·9 million tons in 1929 and from 287·4 million tons in 1913 ; while the number of employees in coal mines had fallen from 952,000 in 1928 to 798,000 in 1934. (These figures are derived from the recent P.E.P. Broadsheet No. 60.)

We may bewail, from the narrow point of view, this reduction in the number of miners employed. But when we remember that nearly 70 per cent. of the cost of coal production is due to the wages of personnel, it is impossible to resist the conclusion that, if that cost is to be diminished in order to induce a greater demand, the high percentage payable to human labour must be reduced ; and in practice it can only be reduced by lessening the number of workers, not by lessening their present low wages. Yet if the demand for coal can be increased by reducing its cost, the question arises whether more workers will not ultimately be needed so as to cope with that increased demand. When the linotype was invented, its use threw thousands of hand-compositors out of work ; but the resulting reduction in the price of newspapers has since created such a vast demand for them that there are now far more employees engaged in the production of penny newspapers than there were when newspapers were sold at many times their present price. The same has happened in the case of bicycles, clothing, wireless apparatus, etc. But in the case of coal, the chief immediate remedy has been supposed to lie in raising its selling price to the general public.

Unfortunately, about 80 per cent. of the reduced output of coal in this country has been due to its lessened demand for export or for steamships plying for foreign trade. Yet, for home consumption, coal has been latterly used in increasing quantities by electrical undertakings, by blast furnaces and by iron and steel works, despite modern improvements in its more economical utilisation. Just over 75 per cent. of our saleable coal is destined for home consumption.

Even, however, if the employees working underground at the coal face can never be restored to their former number, the wider point of view raises a doubt as to whether this is to be nationally deplored, provided, of course, that the unemployed and their offspring can be transferred to other developing occupations. We may feel disposed to wonder whether, at least in its present form, coal-mining is a desirable employment for civilised man. We may recall the days when, before

the use of oil fuel and other improvements, the coaling of ships was carried out abroad almost wholly by half-nude, coal-begrimed coolies, or when, before the use of modern cranes and other mechanical appliances in our home docks, human labour was required to lift and to transport bales and cases of enormous weight and size. Coal-mining is not a physically unhealthy occupation. The miner's work demands intelligent foresight rather than mere bodily strength. But it is carried out under conditions of feeble illumination and at considerable depths underground, in relative isolation and not infrequently in adverse conditions of high temperature and of insufficient or too violent ventilation. Still more important, it is a dangerous occupation, involving the risks of falling roofs and explosions, and hence considerable mental anxiety, which, though habitually suppressed, finds its outlet in other forms of emotional instability and is revealed in the liability to miner's nystagmus, now generally recognised as of psycho-neurotic origin.

Even though the continuance of human labour in underground mines is inevitable, has everything been done to make the human factor in this industry as satisfactory as possible? Should boys under 14 and old men still be employed in underground work? And is it to be believed that in reality the too frequent disputes between mining employers and employed rest solely on the wages paid by the former to the latter, or on the hours of work? It is well known that a worker in any occupation does not necessarily seek the most remunerative work, if thereby working conditions become more unsatisfactory than those which he can obtain at a lower rate of payment. Moreover, the publicly announced causes of an industrial dispute are seldom the fundamental ones : often they are merely the most tangible reasons, or the last straws that have broken the camel's back ! Does anyone suppose that the unsatisfactory relations so long existing between the miners' trade union and the employers' association rest really and solely on the wages or hours problem? It has been well said that each industry gets the trade union that it deserves, and there can be no doubt that even within any one industry a trade union behaves very differently to good and to bad employers, when precisely the same difficulties arise and require friendly readjustment. It is not less true that every trade union gets the employers'

federation it deserves, and that by the very nature of his occupation and conditions of work the coal-miner is psychologically a 'difficult' employee.

Improved methods of industrial production and distribution may do wonders. But how much more can also be done by improved industrial relations, and hence by improvements in the will to work! Given good personal relations, miners are only too ready to suggest not only better working conditions that will improve the human factor, but also those that will more directly avoid waste and promote more efficient work. This is certainly the experience of the staff of the National Institute of Industrial Psychology gained during their past investigations, extending over several years, in several coal mines. They introduced a better miner's lamp, which increased illumination and reduced the casting of shadows. Quite wrongly, the management predicted that the miners would refuse to adopt it, because of its heavier weight: on the contrary, they were unanimous in their demand for it, saying that it facilitated, and that they felt surer in, their work. The Institute's staff was able to report similar successes in the improved illumination which they introduced at the pit bottom and in the screen-room, and in the investigations which they conducted into the more effective shape, size and weight of the miner's pick and into the best movements in wielding it. They also found opportunities for research into certain needless and irritating delays due to congestion and defective flow of material underground and above ground, and into methods of payment and the problem of 'dirt' sent up from the face with the coal. And they devised schemes for the better selection and training of the miner and for improvements in the easy and speedy transmission, and in the ready and correct interpretation, of signals, etc.; the aim of these and other investigations being directed not only to increases in efficiency and to reductions in waste of effort, but also to the diminution of accidents.

Since the time when these inquiries were conducted, experience has proved the value of investigating also the problems of distribution from the human aspect. Much work in the coal industry now awaits the attention of the industrial psychologist in regard to ascertaining and meeting the demands and desires, actual and potential, of purchasers,

remedying the wastage of time and expense in transport and elsewhere before the coal reaches its consumer, and other similar problems in which the human factor plays an important part, requiring an expert in this special aspect for their solution. It is only by their solution that the financial position of the coal industry can be completely re-established.

It should be realised that the miner is now a very different type of man from what he was in the days long past. In those days the most useful managerial assistant was he who could swear the hardest and could most easily knock a man down. To-day the miner reads more serious books and drinks far less alcohol than he ever did before. More than ever, he demands decent housing, and he appreciates the provision of pithead baths and other amenities which make for modern civilised life. Like employees in other industries, he is eager to welcome other than monetary incentives in his life's work, provided, of course, that his earnings are sufficient for a decent life.

There is, indeed, abundant evidence that purely economic factors are by no means the only ones which are required for the resuscitation of the coal-mining industry. Without closer and wider attention to the human factor, without better relations between employers and employed, that resuscitation, if it is to be real and lasting, can never take place.

C. S. MYERS.

